IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:		Atty. Docket No.:	000479.00114
Maureen Caudill et al.			
Serial No.:	10/724,170	Group Art Unit:	2162
Filed:	December 1, 2003	Examiner:	Myint, Dennis Y
For:	Method and System of Ranking and Clustering for Document Indexing and Retrieval	Confirmation No.:	9385

APPEAL BRIEF

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Sir:

This is an Appeal Brief in accordance with 37 C.F.R. § 41.37 in support of Appellants' November 15, 2007, Notice of Appeal. Appeal is taken from the Final Office Action mailed August 20, 2007 (hereinafter referred to as, *Final Action*). Please charge any necessary fees in connection with this Appeal Brief to our Deposit Account No. 19-0733.

REAL PARTY IN INTEREST

37 C.F.R. § 41.37(c)(1)(i)

The owner of this application, and the real party in interest, is Science Applications International Corporation.

RELATED APPEALS AND INTERFERENCES

37 C.F.R. § 41.37(c)(1)(ii)

There are no related appeals and interferences.

STATUS OF CLAIMS

37 C.F.R. § 41.37(c)(1)(iii)

Claims 81-99 stand rejected and are shown in the attached Claims Appendix. Claims 1-80 are canceled. Claims 81, 87, and 93 are independent claims. Only pending claims 81-99 are shown in the attached Claims Appendix.

Appellants hereby appeal the rejection of claims 81-99.

STATUS OF AMENDMENTS

37 C.F.R. § 41.37(c)(1)(iv)

Appellants' Amendment and Response to Office Action filed June 13, 2007, added new dependent claim 99. As such, the Claims Appendix represents the claims based on entry of the Amendment and Response to Office Action filed June 13, 2007.

SUMMARY OF CLAIMED SUBJECT MATTER

37 C.F.R. § 41.37(c)(1)(v)

In making reference herein to various portions of the specification and drawings in order to explain the claimed invention, Appellants do not intend to limit the claims; all references to the specification and drawings are illustrative unless otherwise explicitly stated.

The present invention relates to ranking documents based on relevance to a query and in accordance with user feedback. *Specification*, p. 1, ll. 5-15.

Independent claim 81 recites,

"One or more computer readable media storing computer executable instructions to perform a method for vectorizing a set of document predicate structures, the method comprising:" - *Specification*, p. 35, ll. 10-19, p. 45, l. 24 to p. 46, l. 16, p. 49, ll. 1-20, p. 50, ll. 3-30, p. 74.

"identifying at least one predicate and argument in said set of document predicate structures by a predicate key that is an integer representation;" - *Specification*, p. 13. ll. 3-7, p. 16, ll. 27-31; p. 17, ll. 8-18; p. 22, ll. 3-6; and Figures 1-2, reference elements 120, 122, 124, and 130.

"estimating conceptual nearness of two of said document predicate structures in said set of document predicate structures by subtracting corresponding ones of said predicate keys; and" - *Specification*, p. 16, l. 28 – p. 17, l. 7; and Figures 1-2, reference elements 120, 122, 124, and 130.

"outputting at least one document based upon the estimated conceptual nearness." - *Specification*, p. 22, ll. 21-28.

Independent claim 87 recites,

"One or more computer readable media storing computer executable instructions to perform a method for vectorizing a set of document predicate structures, the method comprising:" - *Specification*, p. 35, ll. 10-19, p. 45, l. 24 to p. 46, l. 16, p. 49, ll. 1-20, p. 50, ll. 3-30, p. 74.

"identifying at least one predicate in said set of document predicate structures by a predicate key that is an integer representation;" - *Specification*, p. 13. ll. 3-7, p. 16, ll. 27-31; p. 17, ll. 8-18; p. 22, ll. 3-6; and Figures 1-2, reference elements 120, 122, 124, and 130.

"estimating conceptual nearness of two of said document predicate structures in said set of document predicate structures by subtracting corresponding ones of said predicate keys; and" - *Specification*, p. 16, l. 28 – p. 17, l. 7; and Figures 1-2, reference elements 120, 122, 124, and 130.

"outputting at least one document based upon the estimated conceptual nearness." - *Specification*, p. 22, ll. 21-28.

Independent claim 93 recites,

"One or more computer readable media storing computer executable instructions to perform a method for constructing multi-dimensional vector representations for each document of a set of documents, the method comprising:" - *Specification*, p. 35, ll. 10-19, p. 45, l. 24 to p. 46, l. 16, p. 49, ll. 1-20, p. 50, ll. 3-30, p. 74.

"determining each predicate structure of one or more predicate structures M in each document of the set of documents, said M predicate structures including a predicate and at least

one argument;" - *Specification*, p. 13, ll. 3-7, p. 16, ll. 27-31; p. 17, ll. 8-18; p. 22, ll. 3-6; and Figures 1-2, reference elements 120, 122, 124, and 130.

"identifying the predicate and the at least one argument in each of said M predicate structures by a predicate key that is an integer representation;" - *Specification*, p. 16, ll. 27-31; p. 17, ll. 8-18; p. 22, ll. 3-6; and Figures 1-2, reference elements 120, 122, 124, and 130.

"determining a fixed number of arguments q for vector construction;" - *Specification*, p. 17, ll. 16–30.

"constructing an N-dimensional vector representation of each document based upon the predicate and q arguments; and" - *Specification*, p. 18, ll. 1–10.

"outputting at least one document of the set of documents based upon the constructed N-dimensional vector representation of the at least one document," - *Specification*, p. 22, ll. 21-28.

"wherein any predicate structure of said M predicate structures that includes less than q arguments fills unfilled argument positions with a numerical zero." - *Specification*, p. 17, ll. 19–30.

Dependent claims 86 and 92 each recites,

"wherein said set of document predicate structures are representations of logical relationships between words in a sentence." - *Specification*, p. 9, ll. 19-21; p. 13, ll. 3-4.

Dependent claim 99 recites,

"wherein each of said document predicate structures in said set includes a predicate and a set of arguments, wherein the predicate is one of a verb and a preposition." - *Specification*, p. 13, ll. 3-7.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

37 C.F.R. § 41.37(c)(1)(vi)

The remaining grounds of rejection on appeal include:

1) Claims 81-83, 86-89, and 92 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Maarek et al. ("Emphemeral Document Clustering for Web Applications,"

IBM Research Report, RJ 10186, April 2000, hereinafter referred to as Maarek) in view of Call (U.S. Published App. No. 2002/0143521, hereinafter referred to as *Call*).

2) Claims 84-85 and 90-91 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Maarek* in view of *Call* and further in view of Liddy et al. (U.S. Patent No. 5,873,056, hereinafter referred to as *Liddy*).

3) Claim 93 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Maarek* in view of *Call* in view of *Liddy* and further in view of Dorocak (Dorocak et al. "Conditional Syntactic Specification," Proceedings of the Annual Conference, August 1973, pages 101-105, hereinafter referred to as *Dorocak*).

4) Claims 94-98 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Maarek* in view of *Call* in view of *Liddy* in view of *Dorocak* and further in view of De Bellis (U.S. Patent No. 6,760,720, hereinafter referred to as *De Bellis*).

5) Claim 99 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Maarek* in view of *Call* and further in view of Wachtel (U.S. Patent No. 5,870,701, hereinafter referred to as *Wachtel*).

ARGUMENT

37 C.F.R. § 41.37(c)(1)(vii)

1. Rejection of claims 81-83, 86-89, and 92 over *Maarek* in view of *Call*

The *Final Action* rejects claims 81-83, 86-89, and 92 as being unpatentable over *Maarek* in view of *Call*. Appellants respectfully traverse this rejection.

Independent claim 87:

The combination of *Call* and *Maarek* fails to teach or suggest each and every feature of claim 87 for several features. Claim 87 recites, among other features, "identifying at least one predicate in said ***set of document predicate structures***" (emphasis added). As explicitly admitted by the *Final Action*, *Maarek* fails to teach or suggest at least the feature of a set of document predicate structures (*Final Action*, p. 12 and p. 14). In response, the *Final Action* relies on *Call*.

In rejecting this feature, the *Final Action* relies on paragraph [0117] of *Call*. (*Final Action*, p. 12 and p. 14). However, as noted in previous response by Appellants, neither this

paragraph, nor any other paragraph in *Call*, describes Appellants' feature of a set of document predicate structures. The noted paragraph [0117] of *Call* recites,

> [0117] Items may be organized into "sets" which consist simply of an ordered collection of item numbers which are gathered in accordance with some criteria. For example, a set corresponding to a relational database "table" could be formed by collecting together all items of the same item type in one set. The items in a set need not be of the same type, however, but may be collected in a single set based on the fact that they share some common attribute. Thus, items of type "apple" and of type "orange" may be collected together to form a set named "treefruit." Importantly, new item types may be derived from existing item types and both may be processed by polymorphic methods commonly used in object-oriented systems. These and other features of sets, and the mechanisms provided to create, sort, combine and process the members of such sets, will be described in more detail later.

The *Final Action* relies on the description of how item types may be grouped to form a set. (*Final Action*, p. 3). As noted in the paragraph provided above, an example is provided of how item types "apple" and "orange" may be collected together to form a set named "treefruit." However, a *Call* "item" **is not** a document predicate structure. Predicate structures are explicitly defined in the specification to contain a predicate, which is either a verb or preposition, and a set of arguments, each of which may be any part of speech (Appellants' original specification, p. 13, ll. 3-7). There is no teaching or suggestion in *Call* of **a set of document predicate structures**. A set of item types, such as "apple" and "orange" to form a set of "treefruit" is not a set of document predicate structures as claimed.

The *Final Action* attempts to merge the "items" organized into "sets" in *Call* with page 5, paragraph 4 of *Maarek* to describe claim 87 feature of, "identifying at least one predicate in said set of document predicate structures," that recites the set of document predicate structures. However, neither paragraph [0117] of *Call*, recited above, or page 5, paragraph 4 of *Maarek* teaches or suggest anything about at least one predicate in the set. The cited portion states that an indexing unit may be a single term or complex form, such as a phrase. (*Maarek*, p. 5, para. 4, ll. 1-3). However, neither reference teaches or suggests with respect to identifying at least one predicate.

Still further, as admitted by the *Final Action*, *Maarek* fails to teach or suggest, "by subtracting corresponding ones of said predicate keys" (*Final Action*, p. 12 and p. 14). In

response, the *Final Action* again relies on *Call* for support. Under the *Call* system, "a sequence of one or more integers is used to represent the character data in natural language text, including the natural language text data in XML document" (*Call*, p. 5, para. [0068]). *Call* fails to teach or suggest the claim 87 feature of, "estimating conceptual nearness of two of said document predicate structures in said set of document predicate structures by subtracting corresponding ones of said predicate keys." *Call* describes how ordered collections of items called "sets" may be created by query (filter) mechanisms and stored. (*Call*, p. 5, para. [0071] and p. 1, para. [0117]). As with the previous Office Actions, in rejecting this feature, the *Final Action* fails to provide any evidence within *Call* or any other reference and merely states that, "***it is inherent*** in Call's method that conceptual nearness is obtained by subtracting corresponding one of predicate keys." (*Final Action*, p. 12 and p. 14, emphasis added). The *Final Action* supplements this conclusion stating, "[n]ote that, in the method of Call, data elements/concepts are identified by integers and data elements/concepts of similar attribute are organized into sets. Thus, ***it can be inferred*** from Call's teachings and method that conceptual nearness is obtained by subtracting corresponding one of predicate keys." (*Final Action*, p. 6, emphasis added). Appellants respectfully disagree with this errant conclusion drawn from nothing more than an inability to find the teachings of Appellants' features in art references.

With respect to *Call*, paragraph [0117] on page 11, as cited in the *Final Action* for support, provides numerous manners to generate a set of items. As described, all items of the same item type may be collected in one set, or may be collected based upon a common attribute. (*Call*, p. 11, para. [0117]). The same paragraph [0117] states that, "[t]hese and other features of sets, and the mechanisms provided to create, sort, combine and process the members of such sets, will be described in more detail later." However, none of the remaining paragraphs of *Call* or any other portion describes the feature of "estimating conceptual nearness of two of said document predicate structures in said set of document predicate structures by subtracting corresponding ones of said predicate keys." In fact, subtraction of integers ***is not described at all*** in *Call*. The fact that a certain result or characteristic ***may*** occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, (Fed. Cir 1993). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the

allegedly inherent characteristic necessarily flows from the teaching of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). See MPEP section 2112. Therefore, absent rationale or evidence tending to show inherency, **it is not inherent** in *Call*'s method that conceptual nearness is obtained by subtracting corresponding one of predicate keys as expressed in the *Final Action*. If multiple manners exist, inherency cannot be present. For example, although not stated in *Call*, the integers of data elements/concepts may be compared and grouped into "sets" when integers are the same. Such a system could possibly exist in *Call*, although not described, and such a system is clearly not subtracting predicate keys as in Appellants' claim 87. However, if such an inherency argument is maintained, Appellants again respectfully request evidence to support such a contention in the Examiner's response.

Independent claim 81:

The combination of *Call* and *Maarek* fails to teach or suggest each and every feature of claim 81 for several features. Claim 81 recites, among other features, "identifying at least one predicate and argument in said ***set of document predicate structures***" (emphasis added). As explicitly admitted by the *Final Action*, *Maarek* fails to teach or suggest at least the feature of a set of document predicate structures (*Final Action*, p. 12). In response, the *Final Action* relies on *Call*.

In rejecting this feature, the *Final Action* relies on paragraph [0117] of *Call*. (*Final Action*, p. 12). However, as noted in previous responses by Appellants, neither this paragraph, nor any other paragraph in *Call*, describes Appellants' feature of a set of document predicate structures. The noted paragraph [0117] of *Call* recites,

> [0117] Items may be organized into "sets" which consist simply of an ordered collection of item numbers which are gathered in accordance with some criteria. For example, a set corresponding to a relational database "table" could be formed by collecting together all items of the same item type in one set. The items in a set need not be of the same type, however, but may be collected in a single set based on the fact that they share some common attribute. Thus, items of type "apple" and of type "orange" may be collected together to form a set named "treefruit." Importantly, new item types may be derived from existing item types and both may be processed by polymorphic methods commonly used in object-oriented systems. These and other features of sets, and the mechanisms provided to create, sort, combine and process the members of such sets, will be described in more detail later.

The *Final Action* relies on the description of how item types may be grouped to form a set. (*Final Action*, p. 3). As noted in the paragraph provided above, an example is provided of how item types "apple" and "orange" may be collected together to form a set named "treefruit." However, a *Call* "item" **is not** a document predicate structure. Predicate structures are explicitly defined in the specification to contain a predicate, which is either a verb or preposition, and a set of arguments, each of which may be any part of speech (Appellants' original specification, p. 13, ll. 3-7). There is no teaching or suggestion in *Call* of **a set of document predicate structures**. A set of item types, such as "apple" and "orange" to form a set of "treefruit" is not a set of document predicate structures as claimed.

The *Final Action* attempts to merge the "items" organized into "sets" in *Call* with page 5, paragraph 4 of *Maarek* to describe claim 81 feature of, "identifying at least one predicate and argument in said set of document predicate structures," that recites the set of document predicate structures. However, neither paragraph [0117] of *Call*, recited above, or page 5, paragraph 4 of *Maarek* teaches or suggest anything about at least one predicate and argument in the set. In fact, the recited portion of *Maarek* fails to teach or suggest anything about a predicate compared to an argument. The cited portion states that an indexing unit may be a single term or complex form, such as a phrase. (*Maarek*, p. 5, para. 4, ll. 1-3). However, neither reference teaches or suggests with respect to identifying at least one predicate and argument.

Still further, as admitted by the *Final Action*, *Maarek* fails to teach or suggest, "by subtracting corresponding ones of said predicate keys" (*Final Action*, p. 12). In response, the *Final Action* again relies on *Call* for support. Under the *Call* system, "a sequence of one or more integers is used to represent the character data in natural language text, including the natural language text data in XML document" (*Call*, p. 5, para. [0068]). *Call* fails to teach or suggest the claim 81 feature of, "estimating conceptual nearness of two of said document predicate structures in said set of document predicate structures by subtracting corresponding ones of said predicate keys." *Call* describes how ordered collections of items called "sets" may be created by query (filter) mechanisms and stored. (*Call*, p. 5, para. [0071] and p. 1, para. [0117]). As with the previous Office Actions, in rejecting this feature, the *Final Action* fails to provide any evidence within *Call* or any other reference and merely states that, "***it is inherent*** in Call's method that conceptual nearness is obtained by subtracting corresponding one of predicate

keys." (*Final Action*, p. 12, emphasis added). The *Final Action* supplements this conclusion stating, "[n]ote that, in the method of Call, data elements/concepts are identified by integers and data elements/concepts of similar attribute are organized into sets. Thus, ***it can be inferred*** from Call's teachings and method that conceptual nearness is obtained by subtracting corresponding one of predicate keys." (*Final Action*, p. 6, emphasis added). Appellants respectfully disagree with this errant conclusion drawn from nothing more than an inability to find the teachings of Appellants' features in art references.

With respect to *Call*, paragraph [0117] on page 11, as cited in the *Final Action* for support, provides numerous manners to generate a set of items. As described, all items of the same item type may be collected in one set, or may be collected based upon a common attribute. (*Call*, p. 11, para. [0117]). The same paragraph [0117] states that, "[t]hese and other features of sets, and the mechanisms provided to create, sort, combine and process the members of such sets, will be described in more detail later." However, none of the remaining paragraphs of *Call* or any other portion describes the feature of "estimating conceptual nearness of two of said document predicate structures in said set of document predicate structures by subtracting corresponding ones of said predicate keys." In fact, subtraction of integers ***is not described at all*** in *Call*. The fact that a certain result or characteristic ***may*** occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, (Fed. Cir 1993). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teaching of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). See MPEP section 2112. Therefore, absent rationale or evidence tending to show inherency, **it is not inherent** in *Call*'s method that conceptual nearness is obtained by subtracting corresponding one of predicate keys as expressed in the *Final Action*. If multiple manners exist, inherency cannot be present. For example, although not stated in *Call*, the integers of data elements/concepts may be compared and grouped into "sets" when integers are the same. Such a system could possibly exist in *Call*, although not described, and such a system is clearly not subtracting predicate keys as in Appellants' claim 81. However, if such an inherency argument is maintained, Appellants again respectfully request evidence to support such a contention in the Examiner's response.

In addition, claim 81 recites, among other features, "identifying at least one predicate and argument in said set of document predicate structures by a predicate key that is an integer representation." In rejecting these features, the *Final Action* relies on various portions of *Maarek*. (*Final Action*, p. 11). *Maarek* fails to teach or suggest this feature.

The cited portions of *Maarek* describe an indexing unit that can be a single term, complex form, or lexical constructs (*Maarek*, p. 5, para. 4) and a lexical affinity (*Maarek*, p. 7, last para. to p. 8, first para.). However, neither the cited portions nor any other portion of *Maarek* describes "identifying at least one predicate and argument in said set of document predicate structures" (emphasis added). *Maarek*, like *Call*, describes processing of natural language text, not identification and estimation based upon document predicate structures. As such, the combination of *Call* and *Maarek* fails to teach or suggest each and every feature of claim 81 and withdrawal of the rejection is respectfully requested.

Dependent claims 82-83 and 88-89:

Dependent claims 82-83 and 88-89, which depend from claims 81 and 87, are allowable over the art of record for at least the same reasons as described above with reference to their ultimate base claim.

Dependent claims 86 and 92:

Claims 86 and 92 each recite, "wherein said set of document predicate structures are representations of logical relationships between words in a sentence." No portion of *Maarek* or *Call* teaches or suggests at least these features of claims 86 and 92. In rejecting these features, the *Final Action* relies on *Maarek* and states, "i.e., Instead of the typical use of single words as indexing units, our indexing unit consists of a pair of words that are linked by a lexical affinity (LA)." (*Final Action*, p. 14). As admitted by the *Final Action*, *Maarek* fails to teach or suggest "a set of document predicate structures." (*Final Action*, p. 12). As such, *Maarek* cannot possibly teach or suggest that the set of document predicate structures are representations of logical relationships between words in a sentence.

2. Rejection of claims 84-85 and 90-91 over *Maarek* in view of *Call* and further in view of *Liddy*

Claims 84-85 and 90-91, depend from claims 81 and 87. *Liddy* fails to cure the multiple deficiencies of *Maarek* and *Call* noted above with respect to claims 81 and 87. Thus, claims 84-85 and 90-91 are allowable over the art of record for at least the same reasons as described above with reference to their ultimate base claim.

3. Rejection of claim 93 over *Maarek* in view of *Call*, in view of *Liddy*, and further in view of *Dorocak*

Claim 93 recites, among other features, "identifying the one predicate and the at least one argument in each of said M predicate structures by a predicate key that is an integer representation." In rejecting these features, the *Final Action* relies on various portions of *Maarek* and *Call*. (*Final Action*, p. 16). *Maarek* and *Call* fail to teach or suggest this feature.

The cited portions of *Maarek* describe an indexing unit that can be a single term, complex form, or lexical constructs (*Maarek*, p. 5, para. 4) and a lexical affinity (*Maarek*, p. 7, last para. to p. 8, first para.). However, neither the cited portions nor any other portion of *Maarek* describes "identifying the predicate and at the least one argument" (emphasis added). *Maarek*, like *Call*, describes processing of natural language text, not identification and estimation based upon document predicate structures. As such, the combination of *Call* and *Maarek* fails to teach or suggest each and every feature of claim 93 and withdrawal of the rejection is respectfully requested.

In addition, claim 93 recites, among other features, "determining a fixed number of arguments q for vector construction." For support in rejecting this feature, the *Final Action* cites page 104 and lines 38-45 of *Dorocak* and states, "Where the number of arguments is less than the number of parameters specified in the corresponding definition, the argument list will be assumed to be filled out by arguments whose value is zero." (*Final Action*, p. 17). However, with respect to arguments, the "definition" in *Dorocak* merely states modifying "the specifications relating to the correspondence between the number of arguments in a procedure reference and the number of parameters in a procedure definition." (*Dorocak*, p. 104). Neither the cited portion nor any other portion of *Dorocak* recites claim 93 feature of, "determining a

fixed number of arguments q for vector construction." As such, claim 93 is patentably distinct over the art of record for at least this additional reason.

4. Rejection of claims 94-98 over *Maarek* in view of *Call*, in view of *Liddy*, *Dorocak*, and further in view of *De Bellis*

Claims 94-98, which depend from claim 93, are allowable over the combination of references for at least the same reasons as their ultimate base claim. *De Bellis* fails to cure the deficiencies of *Call*, *Maarek*, *Libby*, and *Dorocak* as noted above with respect to claim 93. As such, claims 94-98, which depend from claim 93, are allowable over the combination of references for at least the same reasons as its ultimate base claim.

Dependent claims 95 and 97:

Claims 95 and 97 each recite, "wherein conceptual nearness of two of said N-dimensional vector representations is estimated by subtracting corresponding ones of said predicate keys." Such a feature is similar to a feature recited in claims 81 and 87 noted above. No portion of *Maarek* or *Call* teaches or suggests at least these features of claims 95 and 97. In addition, *Liddy*, *Dorocak*, and *De Bellis* fail to cure the deficiencies of *Maarek* and *Call*. In rejecting this feature, the *Final Action* relies on the same baseless inherency argument noted above with respect to claims 81 and 87. As noted, the inherency argument is not a proper argument for rejection and none of the references teach or suggest such a feature and there are a number of other manner in which two integers may be compared with one another.

5. Rejection of claim 99 over *Maarek* in view of *Call* and further in view of *Wachtel*

Claim 99 depends from claim 81. *Wachtel* fails to cure the multiple deficiencies of *Maarek* and *Call* noted above with respect to claim 81. Thus, claim 99 is allowable over the art of record for at least the same reasons as described above with reference to its ultimate base claim.

CONCLUSION

For all of the foregoing reasons, Appellants respectfully submits that the final rejection of claims 81-99 is improper and should be reversed.

Respectfully submitted,
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Dated: February 15, 2008

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CLAIMS APPENDIX

37 C.F.R. § 41.37(c)(1)(viii)

Claim 81: One or more computer readable media storing computer executable instructions to perform a method for vectorizing a set of document predicate structures, the method comprising:

identifying at least one predicate and argument in said set of document predicate structures by a predicate key that is an integer representation;

estimating conceptual nearness of two of said document predicate structures in said set of document predicate structures by subtracting corresponding ones of said predicate keys; and

outputting at least one document based upon the estimated conceptual nearness.

Claim 82: The computer readable media of claim 81, the method further comprising constructing multi-dimensional vectors using said integer representation.

Claim 83: The computer readable media of claim 82, the method further comprising normalizing said multi-dimensional vectors.

Claim 84: The computer readable media of claim 83, the method further comprising identifying at least one query predicate structure by a second predicate key that is a second integer representation, and constructing second multi-dimensional vectors, for said at least one query predicate structure, using said second integer representation.

Claim 85: The computer readable media of claim 81, the method further comprising identifying at least one query predicate structure by a second predicate key that is a second integer representation, and constructing second multi-dimensional vectors, for said at least one query predicate structure, using said second integer representation.

Claim 86: The computer readable media of claim 81, wherein said set of document predicate structures are representations of logical relationships between words in a sentence.

Claim 87: One or more computer readable media storing computer executable instructions to perform a method for vectorizing a set of document predicate structures, the method comprising:

identifying at least one predicate in said set of document predicate structures by a predicate key that is an integer representation;

estimating conceptual nearness of two of said document predicate structures in said set of document predicate structures by subtracting corresponding ones of said predicate keys; and

outputting at least one document based upon the estimated conceptual nearness.

Claim 88: The computer readable media of claim 87, the method further comprising constructing multi-dimensional vectors using said integer representation.

Claim 89: The computer readable media of claim 88, the method further comprising normalizing said multi-dimensional vectors.

Claim 90: The computer readable media of claim 89, the method further comprising identifying at least one query predicate structure by a second predicate key that is a second integer representation, and constructing second multi-dimensional vectors, for said at least one query predicate structure, using said second integer representation.

Claim 91: The computer readable media of claim 87, the method further comprising identifying at least one query predicate structure by a second predicate key that is a second integer representation, and constructing second multi-dimensional vectors, for said at least one query predicate structure, using said second integer representation.

Claim 92: The computer readable media of claim 87, wherein said set of document predicate structures are representations of logical relationships between words in a sentence.

Claim 93: One or more computer readable media storing computer executable instructions to perform a method for constructing multi-dimensional vector representations for each document of a set of documents, the method comprising:

determining each predicate structure of one or more predicate structures M in each document of the set of documents, said M predicate structures including a predicate and at least one argument;

identifying the predicate and the at least one argument in each of said M predicate structures by a predicate key that is an integer representation;

determining a fixed number of arguments q for vector construction;

constructing an N-dimensional vector representation of each document based upon the predicate and q arguments; and

outputting at least one document of the set of documents based upon the constructed N-dimensional vector representation of the at least one document,

wherein any predicate structure of said M predicate structures that includes less than q arguments fills unfilled argument positions with a numerical zero.

Claim 94: The computer readable media of claim 93, wherein any predicate structure of said M predicate structures that includes more than q arguments omits remaining arguments after q argument positions are filled.

Claim 95: The computer readable media of claim 94, wherein conceptual nearness of two of said N-dimensional vector representations is estimated by subtracting corresponding ones of said predicate keys.

Claim 96: The computer readable media of claim 94, the method further comprising normalizing said N-dimensional vector representations.

Claim 97: The computer readable media of claim 93, wherein conceptual nearness of two of said N-dimensional vector representations is estimated by subtracting corresponding ones of said predicate keys.

Claim 98: The computer readable media of claim 93, the method further comprising normalizing said N-dimensional vector representations.

Claim 99: The computer readable media of claim 81, wherein each of said document predicate structures in said set includes a predicate and a set of arguments, wherein the predicate is one of a verb and a preposition.

EVIDENCE APPENDIX

37 C.F.R. § 41.37(c)(1)(ix)

None.

RELATED PROCEEDINGS APPENDIX

37 C.F.R. § 41.37(c)(1)(x)

None.